LIST OF FOSSIL PLANTS COLLECTED BY MR. I. C. RUSSELL, AT
BLACK CREEK, NEAR GADSDEN, ALA., WITH DESCRIPTIONS OF
SEVERAL NEW SPECIES.
by leo lesquereux, columbus, ohio.
[Compiled and prepared for publication by F. M. Knowlton, Assistant Curator Fossil Plants.]
(With Plate xxin.)
In relation to the exact locality and stratigraphic position of these fossil plants, MIr. I. C. Russell, under date of March 12, 1888,* furnishes the following information:
"The fossil plants which were forwarded to Professor Lesquereux for identification were collecterl at some small coal mines on Black Creek, about 2 miles northwest of Gadsulen, Ala. Black Creek flows south along the axis of the gentle synclinal forming the Lookout Mountain platean, and furnishes an escape for the drainage of between 50 and 60 square miles at the southern end of that table-land.
"The plants in question occurred in the shale abore a seam of coal 18 inches thick, and are all from one stratum, the horizon of which is about 750 or 800 feet above the top of the heavy conglomerate kuown as Miilstone Grit, which forms the abrupt escarpment bounding the Lookont Mountain on all sides. The recks in which the plants occur evidently balong to the true Coal Measures, and were once continuons with the Great Warrior coal field, from which they hare been separated by the elevation of an anticlinal fold, the position of which is now occupied by Wills Valley.
"The southern end of the Lookout Mountain platean is terminated abruptly by an east and west fault, having a throw of several thousand feet, which has brought the coal-measure strata in contact with shales of Lower Silurian times. This fanlt oceurs at the junction of the synclinal of Lookont Mountain with an anticlinal of equally grand proportions, the erosion of which has produced the broad, level-Hoored raller stretching sonth from Atalla and Gadsden. The axes of the two folds we have mentioned fall approximately in the same line, and the adjustment of the fold, one being an upward bending of the rock and the other a downward bending, is accomplished by it fracturiug and diesplacement of the strata. This is the only instance known to me where a great anticlinal ant a great synclina! occur ent to end in immediate contact."

1. Calamites ramosus Artis.

Four specimens; Museum number, 2657.

[^0]2. Sphenopteris (Diplothmema) Dicksonioides (Güpp.). Schiiltze.

Two specimens; Musemm number, 2661.
3. Sphenopteris (Diplothmema) subgeniculata (Stur.). Schïltze.

This may be a variety of the sterile plants of Sphenopteris harreyi, Lx., which are the most abmolantly represented specimens in both sterile and fertile fragments.

Two specimens; Mnsenm number, $\because 662$.
4. Sphenopteris Höheninghausi Brgt.

One specimen; Musemm number, 2663.
5. Sphenopteris divaricata ( G ӥpl .

One specimen ; Museum number, $2663 \frac{1}{2}$.
6. Sphenopteris (Zeilleria) Harveyi lax. Sterile and fertile plants with rachis, Pl. xxix, ligs. 5, 5a, 6.
This ferm, extremely variable and represented by many specimens and under divers forms in the collection of Mr. I. C. Russell, was described as Sphenopteris Harceyi Lx. (U. S. Coal Flora, p. 766, Pl. 103, figs. $7,7 b$, and later as Zeilleria delicatula Kidst. in Quart. Journ. Geol. Soc., Vol. XL, p. 592, Pl. Xxv, the anthor, Mr. Robert Kidston, considering it as a synonym of Sphenopteris delicatula Stern., Vers. I, fasc. II, 1. 30, Гl. Xxvi, fig. 5; s. meifolia Stem., Vers. it, p. 56, Гl. xx, fig. 5. Cheilantheites meifolius Goepp., System Filic., p. „41, Pl. Iv, figs. 3, 4 ; N. delicatula Brgt., all forms represented by fragments of sterile piants, whose relation to the abore species is very obscure and donbtful, while Mr. Kidston's figures represent only the fertile pinnæe and pinnules.

The species had evidently two forms, one for sterile parts of the plants generally larger or at least with pimmles and lobes stronger ( P . xxix, tigs. $9,!c)$, with tertiary or ultimate main rachis more or less flexnons or subgenicnlate, the pinne and pimules either at right angles or eurved down at base, with divisions open or oblique, all the divisions flat; pinnules orate in outline, two to six lobed; lobes alternate dichotomous or opposite, linear, obtuse at apex, without trace of a medial nerve, except at the base of the primary divisions or pinnules. In other forms the lobes are narrower and longer, filiform, acuminate, open or divaricate, the rachis of pinnse being subgeniculate, and altogether comparable to Diphothmema subgeniculata Stur. In others still, the pimmos are shorter, the lobes shorter, erect, obtuse, bifid at apex, traversed in the middle by a distiuct perenring medial nerve, of charaeter similar to those of Sphenopteris divaricuta Goepp. Indeed the pinmules by their size, their mote of dirision being either bifid or dichotomons, the lobes tlat and withont nerves, short and broad, or long and filform, oblique or divaricate, or distinctly simple nerved, may be compared to a large mumber of species of sphenopteris with more evidence than to S. delicatula Sternb., S. meifola Sternb., ete.

The fertileplants (Pl. xxix, figs. $\mathrm{J}-\mathrm{S}$ ) hare a broad, flat, distinctly striate primary rachis; the secondary division oblique, with rachis of the same character, the tertiary oblique, or at right angles, with rachis flat and smooth, sometimes romul in the middle, and the ultimate divisions ob lique, simple, or trifid, curred, bearing at the apex small globose inrolucrate sporanges parting at maturity into three to five lanceolate lobes curved inward, figs. $S, \tilde{\sigma} a, 6 a$. The divisions of these sporanges are varied apparently from the angle and degree of compressiou, some of them oroid, figs. $6,6 a$, being only split in two lobes. As the sporanges aremuch larger upon some of the specimens, one might admit two species. But fig. 6 is upon the same specimen as fig. 5 , and evidently the form which I have named, var. robusta, is, like the multiple forms of the sterile plants, a mere variety, the size of the sporanges depending on a more advanced stage of maturity or on a different position of the pinne upon the fronds. The piune seen upon the fertile plants without sporauges do not scem to be sterile piunules, but merely pedicels from which the sporanges have been detached.

There is no reason for changing the name originally given to the plant. The specific name has priority and the genns Zeilleria, though well described by its author, represents only the characters of the fruiting part of plants referable to the group Sphenopteris (Hymenoplyllites), but may be changed until more is known upon the fruiting parts of the numerous species described as Sphenopteris.

Six specimens; Museum number, 266t.
7. Sphenopteris Harveyi Lx., var. robusta Lx. Plate xxix, figs. 7, 8.

Seren specimens; Museum number, 2605.
8. Sphenopteris laxifrons? Zeiller.

One specimen; Museum number, 2666 .
9. Sphenopteris polyphylla? L. \& H.

One specimen; Museum number, 2667 .
10. Pseudopecopteris (Sphenopteris) macilenta (L. \& H.) Lx.

Six specimens; Musenm number, 2668 .
11. Pseudopecspteris (Sphenopteris) muricata (Brgt.) Lx.

Twenty-four specimens; Musemm number, 2669.
12. Pseudopecopteris trifoliata Brgt. sp.

One specimen; Museum uumber, 2670 .
13. Pseudopecopteris latifolia Brgt., sp.

Five specimens; Museum number, 2671.
14. Pseudopecopteris Pluckeneti Brgt., sp.

One specimen; Museum number, $\because 672$.
15. Pseudopecopteris (Sphenopteris) Schillingsii And,

One specimen; Masemm number, 2673.
16. Sphenophyllum tenerrimum Ett.

Two specimens; Mnsenm number, $267 t$.
17. Neuropteris Elrodi Lx. Plate xxix, figs. 1-3.

In the U. S. Coal Flora, p. 107, I remarked on this species that it might be a variety of N. S'mithii Lx., and also (l.c.) that it is closely related to N. Duloschi Stur., Culn l'lora, ['l. Ai, Fig. 9. In Vol. In of the same work (U. S. Coal Flora, 3 ). 73 ) $)$, I remarked again of the close afliuity of $N$. Elrodi and $N$. Smithii, considering them as two dif. ferent species, the first with oblong, larger, obtnse or obtusely pointed pinnules, the terminal long-lanceolate, acmminate, or blunt at apex, as in Pl, xyx, figs. 1-3; the second with pinmules very small, nearly romud, the terminal shorter and always obtuse, as in Pl. xxix, fig. 4. At the same time I recognized! (1. 736), the illentity of N. clrodi with N. Duloschi. The figures of Pl. xxix, figs. 1-4, from specimens of Mr. I. C. Russell's collection, where the two forms are represented in many fragments, show the differences in their characters. It is certain that if the two forms ear sometimes found upon the same specimens they are always npon different stems or never attached to the same rachis. I may remark, also, that the finest specimens of $N^{\top}$. Smithsii were commmieated to me from the Coal Measures of Alabama by Prof. Eug. 1. Smith, and later by Prof. William M. Fontaine, from West Virginia, and that the specimens from which the species of $N$. Elrodi was first described were sent years after from the Whetstone quarries of the Chester gromp of Indiana, and that in none of these specimens the two forms are observed. N. Schlearii Stur. has priority on N. elrodi.

Twenty-five speeimens; Muscum number, 2675.
16. Neuropteris Smithii Lx., Plate xxix, fig. 4.

Six specimens; Museum number, 2676.
19. Rachophyllum adnascens L. \& 11 .

One specimen; Museum number, 2677 .
20. Calymmotheca Linkii Stur.

Four specimens, Museum number, 2678 .

## 21. Cordaites validus lx.

One specimen;. Musenm number, 2655.
22. Trigonocarpus ampullæformis Lx,

One specimen, Museum number, 2679.
23. Rhabdocarpus multistriatus Sternbg.

One specimen; Musenm number, 2680 .
24. Rhabdocarpus Russellii, u. sp. Plate xxix, fig. 10.

Fruit large, ovate in the middle, enlarged truncate (or brokenj) at base, nucleus oblong, gradually narowed upward in passing to a narrow tubular appendage, distinct to the apex, onter testa forming a llat border continned upwarl, enlarged toward the apex; thinly closely striate as well as the surface of the muclens, truncate at apex.


Fossil Plants from Alabama. (Page \&is.



[^0]:    * In a letter to Prof. Lester F. Ward.

